

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
 United States Patent and Trademark  
 Office  
 Box PCT  
 Washington, D.C.20231  
 ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

<b>Date of mailing</b> (day/month/year) 08 September 1999 (08.09.99)	
<b>International application No.</b> PCT/SE98/02302	<b>Applicant's or agent's file reference</b> 2986610
<b>International filing date</b> (day/month/year) 15 December 1998 (15.12.98)	<b>Priority date</b> (day/month/year) 19 December 1997 (19.12.97)
<b>Applicant</b> LARSSON, Rolf	

1. The designated Office is hereby notified of its election made:

☒

in the demand filed with the International Preliminary Examining Authority on:

07 July 1999 (07.07.99)

☐

in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was☐

was not


made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<b>The International Bureau of WIPO</b> 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer A. Karkachi Telephone No.: (41-22) 338.83.38
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REC'D 10 DEC 1999

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2986610		<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/SE98/02302	International filing date (day/month/year) 15/12/1998	Priority date (day/month/year) 19/12/1997	
International Patent Classification (IPC) or national classification and IPC B23K20/12			
Applicant ESAB AB et al.			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the report</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input checked="" type="checkbox"/> Certain defects in the international application</li> <li>VIII <input type="checkbox"/> Certain observations on the international application</li> </ul>			
Date of submission of the demand  07/07/1999		Date of completion of this report  07. 12. 99	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer  Jeggy, T  Telephone No. +49 89 2399 7341	



**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/SE98/02302

**I. Basis of the report**

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

**Description, pages:**

1-13 as originally filed

**Claims, No.:**

1-8 as originally filed

**Drawings, sheets:**

1/5-5/5 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/SE98/02302

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Yes:	Claims	1-8
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-8
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-8
	No:	Claims	

### 2. Citations and explanations

**see separate sheet**

## VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

**see separate sheet**

**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

*V.1 Cited documents*

Reference is made to the following documents :

D1 : EP-A-0 0302 954 (Mitsubishi Denki Kabushiki Kaisha), 1989

D2 : WO 95 26254 A (Norsk Hydro AS), 1995

*V.2 Claim 1*

The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (the references in parentheses applying to this document) an apparatus (Fig 6) for welding comprising a welding unit (16, with processing head 11), a work table (1, 34 and 35), for supporting the workpieces (6a and 6b) to be welded and clamping means (5, 8) for clamping the workpieces to the work table in the direction towards one another during the welding operation (column 8, lines 37-44), characterised in that the welding unit comprises a fusion welding head (11, 16).

The subject-matter of claim 1 therefore differs from this known D1 in that a friction stir welding head is included in the apparatus.

The problem to be solved by the present invention may therefore be regarded as to provide a convenient apparatus for welding different kinds of materials workpieces.

D2 describes a method for friction stir welding, based on a specially designed non-consumable probe.

In these two documents (D1 and D2) and in the other cited document as well, no suggestion is given to combine, on a same machine tool frame, friction welding

and fusion welding heads. Also, there are no indications that the same clamping means, for clamping the workpieces to the worktable in the direction towards one another during the welding operation, could be used for friction stir and fusion welding.

So the skilled person would not regard it as obvious to provide an apparatus combining these two joining technologies in order to weld different kinds of materials (for example aluminium or steel workpieces).

Therefore, the subject-matter of claim 1 and claims 2-8, which are dependent from claim 1, meet the requirement of Art. 33 (2) and (3) PCT.

**Re Item VII**

**Certain defects in the international application**

VII.1 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.

VII.2 Two part form of claim 1 is not correct (Rule 6.3 (b) PCT), see Section V.

VII.3 Numbers 19a, 19b, 20a and 20b are missing in Figure 2.

VII.4 Claim 4 should be referred back to claim 3, not to claim 4.

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>2986610</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/SE 98/ 02302</b>	International filing date (day/month/year) <b>15/12/1998</b>	(Earliest) Priority Date (day/month/year) <b>19/12/1997</b>
Applicant <b>ESAB AB et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

## 1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1

☐ None of the figures.

## INTERNATIONAL SEARCH REPORT

International Application No

T/SE 98/02302

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 B23K20/12 B23K26/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 B23K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 106 167 A (LUC PENELOPE JANE VESEY) 15 August 1978 see column 4, line 21 - line 30 see column 6, line 35 - line 41; figures 6-9 ---	1
A	WO 95 26254 A (NORSK HYDRO AS ;MIDLING OLE TERJE (NO); MORLEY EDWARD JAMES (NO);) 5 October 1995 cited in the application see the whole document ---	1
A	WO 93 10935 A (WELDING INST) 10 June 1993 cited in the application ---	1
A	EP 0 423 433 A (IBM) 24 April 1991 see the whole document ---	1,2
	--- -/--	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&amp;" document member of the same patent family

Date of the actual completion of the international search

12 March 1999

Date of mailing of the international search report

26/03/1999

Name and mailing address of the ISA

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Authorized officer

Aran, D



## INTERNATIONAL SEARCH REPORT

International Application No

P/SE 98/02302

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 302 954 A (MITSUBISHI DENKI KABUSCHIKI KAISHA) 15 February 1989 see the whole document ----	3-8
A	JONES G: "ND:YAG LASERS AN INTRODUCTION OT THE TECHNOLOGY AND ITS APPLICATIONS" SHEET METAL INDUSTRIES, vol. 72, no. 5, May 1995, pages 9-12, XP000507902 cited in the application -----	1,2

# INTERNATIONAL SEARCH REPORT

ation on patent family members

International Application No

CT/SE 98/02302

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4106167	A	15-08-1978	GB 1379513 A	02-01-1975
			US 3949896 A	13-04-1976
			CA 954345 A	10-09-1974
			CH 547676 A	11-04-1974
			DE 2152630 A	27-04-1972
			FR 2113120 A	23-06-1972
			SE 374292 B	03-03-1975
WO 9526254	A	05-10-1995	AU 676424 B	06-03-1997
			AU 1592395 A	17-10-1995
			CA 2182719 A	05-10-1995
			CN 1144499 A	05-03-1997
			CZ 9602586 A	16-04-1997
			DE 69502716 D	02-07-1998
			DE 69502716 T	26-11-1998
			EP 0752926 A	15-01-1997
			ES 2117851 T	16-08-1998
			FI 963889 A	27-09-1996
			JP 2792233 B	03-09-1998
			JP 9508073 T	19-08-1997
			NO 964115 A	27-09-1996
			PL 316614 A	20-01-1997
			US 5813592 A	29-09-1998
WO 9310935	A	10-06-1993	AU 662310 B	31-08-1995
			AU 1016495 A	30-03-1995
			AU 658950 B	04-05-1995
			AU 2952892 A	28-06-1993
			CA 2123097 A,C	10-06-1993
			DE 69205991 D	14-12-1995
			DE 69205991 T	11-04-1996
			EP 0615480 A	21-09-1994
			EP 0653265 A	17-05-1995
			JP 2712838 B	16-02-1998
			JP 7505090 T	08-06-1995
			US 5460317 A	24-10-1995
EP 0423433	A	24-04-1991	JP 1979474 C	17-10-1995
			JP 3120737 A	22-05-1991
			JP 7012051 B	08-02-1995
			US 4970365 A	13-11-1990
EP 302954	A	15-02-1989	JP 4051272 B	18-08-1992
			JP 62187584 A	15-08-1987



P.B. 5818 - Patentlaan 2  
2280 HV Rijswijk (ZH)  
☎ (070) 3 40 20 40  
TX 31651 epo nl  
FAX (070) 3 40 30 16

RECEIVED

1999-06-10

AWAPATENT, Göteborg

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Patentamt

Zweigstelle  
in Den Haag  
Recherchen-  
abteilung

European  
Patent Office

Branch at  
The Hague  
Search  
division

Office européen  
des brevets

Département à  
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PBN	

Datum/Date

02.06.98

Zeichen/Ref./Réf.

2976450

Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n°.

97850179.9-2302-

Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire

Esab AB

## COMMUNICATION

The European Patent Office herewith transmits as an enclosure the European search report for the above-mentioned European patent application.

If applicable, copies of the documents cited in the European search report are attached.

☒ Additional set(s) of copies of the documents cited in the European search report is (are) enclosed as well.

The following specifications given by the applicant have been approved by the Search Division:

☒ abstract

☒ title

☐ The abstract was modified by the Search Division and the definitive text is attached to this communication.

The following figure will be published together with the abstract:

1

## REFUND OF THE SEARCH FEE

If applicable under Article 10 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.





European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 97 85 0179

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US 4 106 167 A (LUC PENELOPE JANE VESEY) 15 August 1978 * column 4, line 21 - line 30 * * column 6, line 35 - line 41; figures 6-9 * ---	1	B23K20/12 B23K26/00
A,D	WO 95 26254 A (NORSK HYDRO AS ;MIDLING OLE TERJE (NO); MORLEY EDWARD JAMES (NO);) 5 October 1995 * the whole document * ---	1	
A,D	WO 93 10935 A (WELDING INST) 10 June 1993 ---	1	
A	EP 0 423 433 A (IBM) 24 April 1991 * the whole document * ---	1,2	
A	EP 0 302 954 A (MITSUBISHI DENKI KABUSCHIKI KAISHA) 15 February 1989 * the whole document * ---	3-8	
A,D	JONES G: "ND:YAG LASERS AN INTRODUCTION OT THE TECHNOLOGY AND ITS APPLICATIONS" SHEET METAL INDUSTRIES, vol. 72, no. 5, May 1995, pages 9-12, XP000507902 -----	1,2	TECHNICAL FIELDS SEARCHED (Int.Cl.6) B23K
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 20 May 1998	Examiner Aran, D
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 97 85 0179

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

20-05-1998

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4106167 A	15-08-1978	GB 1379513 A	02-01-1975
		US 3949896 A	13-04-1976
		CA 954345 A	10-09-1974
		CH 547676 A	11-04-1974
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		FR 2113120 A	23-06-1972
		SE 374292 B	03-03-1975
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		JP 3120737 A	22-05-1991
		JP 7012051 B	08-02-1995
		US 4970365 A	13-11-1990
EP 302954 A	15-02-1989	JP 4051272 B	18-08-1992
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